TACOM
Lethality, Survivability, Mobility and Sustainment for America's Army

Aerial Delivery

A Tri-Annual Publication For The Aerial Delivery Community
Volume 4, JUN 04

New and Improved Static Line Helps Save Parachutist's Life!

Back by Popular Demand! - Manufacturer's Week

“SPIDER” CHUTE - It's Back, Bigger and Better Than Ever!

TACOM

Published By Aerial Delivery Sustainment Team, Integrated Logistics Support Center, Natick, MA

Aerial Delivery Magazine - ADM

Publisher's Corner

Aerial Delivery Senior Team Leader Gloria Wooten-Standard with Glenda Gillham, Director of Soldier Product Support Integration Directorate

Can you believe it? We are fast closing in on the end of the most historic year ever for Aerial Delivery! Having beat last year's revenues by millions of dollars, we have already shattered previous sales records. And even better, we were just recently informed that with three months left in FY 04, we have already exceeded last year's Foreign Military Sales by thirty percent!! We would like to recognize four key players who've made this sales bonanza possible. The Soldier Product Support Integration Directorate (SPSID), the Research Development & Engineering Command, the Robert Morris Acquisition Center and last but not least, our Parachute Industry Association manufacturers. These agencies come together for one common cause, utilizing their skills and services to provide the very best Aerial Delivery equipment to our war fighters. They all subscribe to one common philosophy - "Be content, but never satisfied". Obviously we are all honored to do our part in providing quality products to our military. However, we must avoid becoming complacent and feeling that we've done "enough" for our soldiers. So long as there are troops on the frontline, and opposing forces are unwilling to give the peace sign, we will continue to provide our soldiers with the very best equipment to survive and succeed on the battlefield.

In our last issue, the Aerial Delivery Sustainment Team was proud to welcome the incoming ILSC Director, Michael Ahearn. In this issue, we are excited to introduce Glenda Gillham, the newly appointed Director, Soldier Product Support Integration Directorate. Glenda is a career government professional with 29 years of dedicated service with a wealth of experience in Logistics Management. Prior to taking over as director, Glenda was previously head of the Logistics Modernization Program (LMP), a system that will eventually replace the Army's Wholesale Distribution System. As a member of the Acquisition Corps, she attended the Armed Forces Staff College, a NATO sponsored joint services school designed to train senior officers on military strategic planning. Her background includes a Master's in Business Administration from New Hampshire College, Project Manager certification from Boston University, and numerous assignments in Europe and the Caribbean including Germany, Spain, Bahamas and Puerto Rico. Needless to say, her experience and qualifications are outstanding and her reputation as a skilled leader is admirable. As my immediate supervisor, I am absolutely confident that her presence will enhance the success of the Aerial Delivery Sustainment Team.

In closing, thank you all for your magnificent support! We wish you and your families a safe and productive summer. Until then, see you next fiscal year!

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Product Support Integration Directorate
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Tank-automotive and Armaments Command
Kansas Street
Natick, Massachusetts 01760

Publisher: Gloria Wooten-Standard
Gloria.Wooten@natick.army.mil
(508) 233-6011
DSN 256-6011
Editor-in-Chief: Daniel R. Galarza
Daniel.Galarza@natick.army.mil
(508) 233-6013
DSN 256-6013
Editor: Michael Maloney
Michael.Maloney@natick.army.mil
(508) 233-5693
DSN 256-5693

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Point of Contact Daniel R. Galarza
Daniel.Galarza@natick.army.mil
(508) 233-6013
DSN 256-6013

Questions? Comments.
Have an article to submit? Call Daniel Galarza at (508) 233-6013 or e-mail at Daniel.Galarza@natick.army.mil

Submit your Airdrop photos to the *Aerial Delivery Magazine*, we could feature your photo on the Cover! e-mail at Michael.Maloney@natick.army.mil

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Aerial Delivery Sustainment Team Mission

Provide innovative, robust and streamlined total life-cycle logistics and material readiness support to all DoD organizations for Aerial Delivery products.

Photo Gallery

In this issue of ADM we pay tribute to the Low Altitude Parachute Extraction System (LAPES). LAPES is one of the three methods used for Aerial Delivery. With LAPES, up to 38,000 pounds (17,000kg) of cargo is pulled from the aircraft by large cargo parachutes while the aircraft is five to 10 feet (3m) above the ground. The load then slides to a stop within a very short distance.

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in terms of short tons per day, was retained. This planning factor (short tons/day) contains the most uncertainty. However, based upon discussions with SMEs, the mix of cargo delivery methods was markedly reversed to reflect more of a reliance on CDS (a fraction being the Low Cost Airdrop System). Because these requirements were last calculated in 1999, it is important that these requirements be updated to reflect the proper amount and mix of ADE.

Summary

The generation of OPROJ requirements and the review of these requirements is MACOM driven. AR 710-1 requires that OPROJ be re-viewed annually. Some OPROJ which support Special Operations need to be revised to satisfy new ADE needs. Some OPROJ that contain ADE have not been reviewed for many years. Therefore, to ensure that these OPROJ satisfy current mission conditions, there is a need for MACOMs to review, revise, or delete their OPROJ.

The generation of AWRS secondary item requirements is driven by the HQDA issuance of the Guidance Letter. HQDA/HQAMC requested that the APS Manager of ADE, with support from ADE SMEs, develop an enclosure to the Guidance Letter concerning ADE planning factors. A draft Enclosure was submitted to HQAMC in March of this year. Planning factors in the Enclosure are considered to be consis-tent with current aerial delivery doctrine (capability of forced-entry of brigade-sized forces and increased cargo airdrop demand (Army Transformation studies)). Based on these planning factors, personnel parachute requirements should drop by about 70%. The 1999 ADE cargo delivery requirement, in terms of short tons per day, was retained. However, based upon discussions with SMEs, the mix of cargo delivery methods was markedly reversed to reflect more of a reliance on CDS (a fraction being the Low Cost Airdrop System). Update of these requirements to satisfy current mission conditions are of high importance.

The Army wartime vision for the future includes modular Army units, deploying into austere locations if necessary, and arriving intact and immediately employable. The capability for airborne forced entry, and the need to resupply units using various aerial delivery methods continues to be part of this Army vision. The challenge for the Army is to place sufficient command emphasis on the need to review, update, and fine-tune ADE methods and requirements such that anticipated wartime needs are satisfied.

Tom O'Hara is a Supply System Analyst for Commodity Support Team at the Natick Soldier Center, Natick, MA - DSN 656-6026

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New and Improved Static Line Helps Save Parachutist's Life

On October 6, 2003, a parachutist on a training mission at Fort Bragg, N.C., suffered a misrouted static line and found himself dangling helplessly on the outside of a fast moving aircraft. As the crew on the inside took immediate action, seconds seemed like centuries while they struggled to save the life of their fellow soldier. What follows is an account of the incident as indicated in the resulting malfunction report:

While waiting to exit the aircraft, a jumper from Fort Bragg was mistakenly advised by another jumper that his Universal Static Line (USL) was misrouted under his Load Bearing Equipment (personal combat gear) and that he should fix it. The USL is connected to a cable in the aircraft. When the jumper exits the aircraft, a combination of forces such as airspeed and gravity aid in the deployment of the parachute. The jumper looked at his USL and could see that it was under the right riser of the parachute. From his viewpoint, the USL looked misrouted. Thinking he was fixing a problem, the jumper unhooked his USL from the anchor line cable, routed it under his right riser and hooked up again. The Safety (designated safety monitor) supposedly checked all jumpers before their exit and, when it was his turn, the soldier in question exited normally. However, as he exited the aircraft the misrouted USL fed between the riser and pack tray, locked the deployment bag (D-bag) in place and prevented the parachute from deploying. The USL did not break and the jumper was towed outside the aircraft. The soldier stated that he was towed for approximately two minutes, spinning and hitting the aircraft at least 30 times, and that three other jumpers made contact with him. The Safety, upon performing a visual check of the outside rear of the aircraft, noticed the towed jumper. The soldier was then safely retrieved into the aircraft. Surprisingly and thankfully, the jumper sustained only minor bruises to his shoulders and arms!

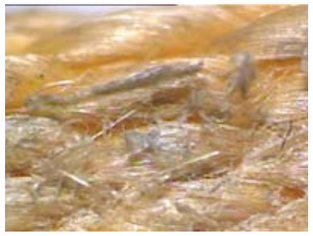
> ***"The soldier stated that he was towed for approximately two minutes, spinning and hitting the aircraft at least 30 times, and that three other jumpers made contact with him.."***

LEFT: "old" Type VIII static line partially unsewn to show the flat webbing
RIGHT: "new" tube shaped USL

This is the first reported towed jumper incident involving a USL. The USL is a new type of static line that was fielded within the last two years. The USL is 15ft but can be extended to 20ft when jumping from specified aircraft IAW Field Manual requirements. The USL is a major improvement in static line technology. The previous static line was a flat webbing that was tri-folded and sewn down the center to a ¾" width. The current static line is a tube edge webbing meaning that in one process, the webbing is woven in the ¾" width tube form, closed with a woven "catchcord", and flattened with a center binding yarn. Inside this tube are nylon "stuffer" yarns orientated along the length of the webbing.

Together, the tube shape, catchcord and stuffer yarns work to maintain the integrity of the USL, very important during a towed jumper incident. The USL was introduced after it was determined that when the older Type VIII static line is extended around the door edge at approximately a 90 degree angle and loaded with the weight of a towed jumper, the folded shape of the static line causes the load to be distributed unevenly across the width of the webbing. This can overload the webbing at certain points, and may cause the webbing to break, especially in the case of a towed jumper. The new USL tube distributes the load evenly across the webbing when extended around the door edge. The stuffer yarns also help the webbing sustain loads, hopefully preventing the USL from breaking. If a yarn does break, the catchcord should inhibit the webbing from unraveling upon itself. Although the jumper still has a reserve parachute to deploy if the static line was to break, there is always the risk that the jumper is unconscious and may suffer further injury. In the case of a towed jumper, the reserve parachute cannot be deployed until the jumper breaks free of the static line.

Yarn damage on USL. Only a portion of the filaments in the yarn was severed.



Surface abrasion on USL.

The Aerial Delivery Engineering Support Team from the Natick Soldier Center, Natick, MA. was asked to conduct a technical inspection of the USL, snap hook and d-bag used in this incident. The purpose of the technical inspection was to determine how these items were affected by the malfunction. While the USL had several areas of wear resulting from frictional contact with the jumper's risers and the door of the aircraft, a visual inspection yielded no areas of wear that would prevent it from being reused. The photos of damage on the USL were taken during the technical inspection using a microscope.

Additionally, physical testing was performed and it was found that this USL still passed the same requirement for strength and elongation that manufacturers use to certify brand new webbing. The D-bag had no apparent wear associated with the malfunction, however the snaphook was rendered unusable. The snaphook had scarring and dislocation of material sustained while

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and the time periods for which the force will be sustained are identified in the Defense Planning Guidance (DPG).

ADE Requirements Development and Review for OPROJ

Several OPROJ requirements currently exist which contain ADE. The process to prepare and generate OPROJ authorizations for materiel requirements in support of specific operations, war plans, and contingencies is well documented in AR 710-1. In essence, the unit requesting to establish or change an OPROJ will prepare a request in memorandum form in support of this action. The memorandum will contain sufficient detail to justify the need for the OPROJ and the basis for items and quantities. The memorandum is then processed through command channels to ensure, among other things, that the OPROJ is justified, funding is available, the OPROJ is not redundant, the items and quantities are adequate, medical materiel requirements are valid, and project codes and authorization documents are generated. The release of OPROJ requires HQDA approval.

War reserve supplies are stored in five locations around the world

AR 710-1 specifies that MACOMs will review and revalidate OPROJs annually to ensure continued applicability to mission requirements. If the annual review does not result in a change to the OPROJ, HQDA is to be notified that the OPROJ was reviewed per AR 710-1 and that no changes are necessary. It also states that when a revalidation results in changes to more than 25 percent of the NSNs, the OPROJ must be formally revised and rejustified. Lastly, AR 710-1 states that all OPROJ must be formally reviewed and rejustified every 5 years. The ADE requirements within OPROJ are typically associated with resupply requirements (i.e., Containerized Delivery System (CDS) and platforms). However, based on recent history, the need for inclusion of certain personnel parachute requirements has been identified.

ADE Requirements for Sustainment Stocks- Background

AR 710-1 states that USAMC will compute the secondary item (Supply Class II and IX, among others) sustainment requirements based on annual HQDA guidance using the War Reserve Automated Process (WRAP) system. WRAP is composed of about 26 separate computer applications. A process to incorporate manual calculations is also provided. Since ADE is a Class II secondary item, the ADE sustainment requirements are determined within WRAP.

WRAP begins when the HQDA Guidance Letter is issued which defines the location and duration of each MCO, contingency, or other operation and the force structure to be used to build equipment density files by the Logistic Support Agency. WRAP computations are based on end item densities, personnel strengths, and many other planning factors. Additional specific planning factors for issues such as chemical defense, feeding plans, mortuary affairs, etc. are contained in enclosures to the Guidance Letter. Because there is no guidance concerning ADE, HQDA/HQAMC recently requested the APS Manager of ADE, with support from ADE subject matter experts (SMEs), develop an enclosure to the Guidance Letter concerning ADE planning factors. Given that HQDA approves the ADE Enclosure, valid requirements can be determined. Lastly, because WRAP is configured to calculate secondary item requirements based on end item (Class VII) densities the ADE secondary item requirements (CDS, platforms, and personnel parachutes) are typically calculated manually and integrated into the WRAP process at a later stage in this process.

The ADE sustainment requirement for cargo air delivery methods was last determined in 1999. The ADE cargo air delivery requirement, in terms of short tons per day, was based on providing support for two theaters of war and a small-scale contingency for specified periods of time. About 70% of the air delivery methods for the 1999 calculated requirement were platform and 30% CDS. The personnel parachute requirement was last determined in the early 90's. This requirement appears to be based on satisfying personnel parachute requirements for multiple airborne divisions.

AWRS ADE Requirements - Current Status

During the week of January 26, 2004 there was a meeting of ADE SMEs at the Defense Distribution Susquehanna Pennsylvania facility. The purpose of this meeting was to discuss ADE War Reserve requirements. One conclusion of this meeting was that existing ADE requirements are not perceived to be consistent with current needs. There was also some confusion between ADE requirements for the different categories of APS. Based on this meeting, two action items were identified. They are:

1. Form a small working group of SMEs to provide guidance and a knowledge base on Aerial Delivery Equipment issues. Currently, the SMEs include members of CASCOM, XVIII ABN CORPS, Special Operation Forces, and Parachute Riggers.
2. Develop an ADE Enclosure to the HQDA Guidance Letter that will contain sufficient guidance to determine ADE sustainment requirements.

Consistent with current aerial delivery doctrine (capability of forced-entry of brigade-sized forces and increased cargo airdrop demand (Army Transformation studies)) and based on input from SMEs, a draft ADE enclosure to the Guidance Letter was developed and submitted to HQAMC in late March of this year. Based on planning factors in this Enclosure, personnel parachute requirements should drop by about 70%. This requirement is based on satisfying current mobility requirements for brigade-sized airdrops on the order of a few thousand troops. The 1999 ADE cargo air delivery requirement,

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Have you ever wondered how the Army is able to be ready for combat on a moments notice? How the Army determines what, where, and how much equipment should be stockpiled to support combat operations? The purpose of this article, using the determination of aerial delivery equipment (ADE) requirements as an example, is to provide the Airborne Community with an overview of how the Army prepares for wartime conditions. The overview will cover the different categories and locations of ADE that are held in reserve to meet wartime needs. It will also summarize past and current issues in the determination of ADE requirements.

Background

In order to respond quickly to wartime contingencies, the Army stockpiles supplies at strategic locations throughout the world. From land-based storage sites to sea-based ships, the Army uses these stockpiles, called Army Prepositioned Stocks (APS) to ensure that our soldiers are combat ready. APS, commonly described as "War Reserves", is one leg of the Army's Strategic Mobility Triad (airlift, sealift, and APS). APS serves two basic purposes. First, the stockpiles reduce the initial amount of strategic lift required to support troops deploying from the United States. Second, this prepositioned stockpile of equipment allows the Army to conduct tactical operations until a stable resupply network is in place.

APS stocks are owned by Headquarters Department of the Army (HQDA) and managed and accounted for by the United States Army Materiel Command (USAMC), the Office of the Surgeon General (OTSG), and the Defense Logistics Agency (DLA). The regulatory document that governs the use of APS is Army Regulation (AR) 710-1, Chapter 6.

Categories and Locations of APS

There are four categories of APS stored at five geographical locations. The four categories of APS are described below:

- Pre-positioned Brigade and various Combat Support Unit Sets. A unit set is all the equipment associated with a particular unit (brigade, battalion, etc.). Because these unit sets are prepositioned forward, the troops simply fall in on the equipment to reduce the deployment response time. Currently there are several Brigade Sets positioned ashore and afloat. A brigade set is typically one armored battalion and one mechanized infantry battalion. ADE is a minimal part of this APS category.
- Operational Projects (OPROJ). OPROJ are associated with initial provisioning of equipment and supplies, above the units authorized equipment, in support of specific operations, contingencies, and war plans. ADE is found in this APS category.
- Army War Reserve Sustainment (AWRS). AWRS is typically referred to as "Sustainment" stock. Sustainment stock is acquired in peacetime to meet increased wartime requirements. Sustainment stocks are pre-positioned in or near a theater of operation to last until resupply at wartime rates are established. ADE is found in this APS category.
- War Reserve Stocks for Allies (WRSA). WRSA is an Office of the Secretary of Defense directed program that ensures US preparedness to assist designated allies in case of war. ADE is not part of this APS category.

The five general geographical locations of APS, along with the category of APS at each location, are shown below:

APS-1 CONUS (OPROJ and AWRS)

APS-2 Europe (Brigade Sets, OPROJ)

APS-3 Afloat (Brigade Sets, OPROJ, AWRS)

APS-4 NE Asia (Brigade Sets, OPROJ, AWRS and WRSA)

APS-5 SW Asia (Brigade Sets, OPROJ, AWRS and WRSA)

Requirements Determination for ADE within APS

Within the four categories of APS, most of the ADE is found in OPROJ and Sustainment stocks. Consistent with the role of OPROJ and Sustainment stocks, the process to generate valid requirements for each of these categories is different. For an OPROJ, the Major Army Commands (MACOMs) determines the materiel requirements that support the specific OPROJ and then submits them to HQDA for approval and resourcing. In contrast, Sustainment stock is associated with a large major combat operation (MCO) over a given period of time (on the order of months). Sustainment stock is used to replace equipment due to mission/battlefield damage and also is used to sustain the battle until resupply at wartime rates is established. The equipment to be sustained, the theaters of operation,

Back by Popular Demand! - Manufacturer's Week

Manufacturer's Week is fast becoming the "must attend" event of the year. Last October, the Aerial Delivery Sustainment Team hosted the inaugural historic event at an elite military installation at North Carolina. Several Aerial Delivery manufacturers converged on Fort Bragg to observe how the military uses the equipment they provide. The instant success of this occasion, is now a key-stone event for the entire Aerial Delivery community. "We are extremely delighted to host this year's second annual Manufacturer's Week", said Gloria Wooten-Standard, Senior Team Leader for the Aerial Delivery Sustainment Team. "The challenge we face is not only to duplicate, but to surpass last year's success"

Manufacturer's Week is scheduled for 4-8 OCT 04, at Fort Bragg, North Carolina. This year's agenda promises to be just as, if not more exciting, than last year's extravaganza. The week-long event brings government acquisition, commodity, engineering and budget representatives together with defense industry aerial delivery manufacturers. The two groups are teamed together as they observe soldiers preparing and performing an actual military airborne operation. Where the observation stops the interaction begins as visitors are given the opportunity to talk directly to the troops and get user feedback for future aerial delivery equipment improvements and innovations. The "M-Week" planning committee performed their first sight survey in March. They are already instituting changes to make the event better than ever. Feedback taken from last years' attendees has been extremely helpful in planning for this year's gathering. As a result, there are already changes to the hotel, number of attendees and event schedule. Finding accommodations closer to Fort Bragg and local amenities will reduce travel times and provide more time for site visits. Limiting the number of attendees will allow visitors to position themselves closer to hear the event guides and speakers. Some events will be shortened or expanded to maintain a lively pace for the attendees. Scheduled stops will be reduced or lengthened to ensure that the various dimensions (planning, preparation, execution, as well as parachute packing, maintenance and storage) of military aerial delivery are explored.

"The challenge we face is not only to duplicate, but to surpass last year's success" - Gloria Wooten-Standard, Senior Team Leader for the Aerial Delivery Sustainment Team

Peter Bourdon, Vice President of Bourdon Forge Co. Inc. volunteered to don a Special Forces parachute while brother Jeff (R) and Chris Crispino (L) look on

The growing prestige of Manufacturers Week has made it a significant Aerial Delivery community event. Due to the limited amount of spaces, government and defense industry leaders are encouraged to send others within their organization that may have missed last year's runaway success. For more information, please contact the event organizer, Dan Galarza, at 508-233-6013, or via e-mail at Daniel.Galarza@natick.army.mil.

New and Improved Static Line Helps Save Parachutist's Life

attached to the anchor line cable and under extreme load from the towed jumper. The dislocated metal creates a sharp edge that has the potential to inflict damage on the anchor line cable and therefore was removed from circulation.

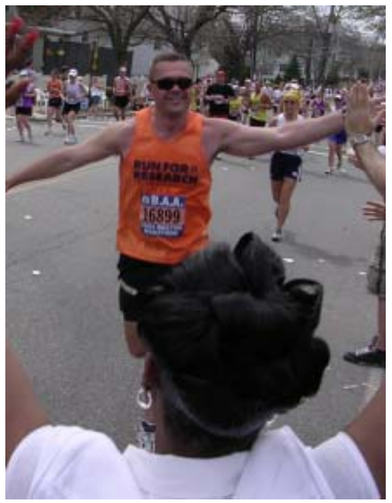
Although the static line used in the incident appears to have sustained minimal damage, the results are still inconclusive. We are happy to report that the towed jumper was safely rescued. However, we must bear in mind that the results of the technical inspection reflect only the findings of one investigation. The Aerial Delivery Engineering Support Team at Natick, MA, will continue to evaluate equipment used in these types of malfunctions to develop a baseline of physical properties to assist in future investigations. For this particular incident, the fact that the static line did not snap or break is a tribute to the high quality standards of the manufacturer. Credit must also be given to the soldiers whose quick thinking and immediate action resulted in saving the soldier's life.

Christine DiSanto is a Textile Technologist for the Aerial Delivery Engineer Support Team at the Natick Soldier Center, Natick, MA.

Aerial Delivery Goes the Distance at The 2004 Boston Marathon

April 19, 2004 was an unseasonably hot Patriots day in the Commonwealth of Massachusetts; in fact it was 83-degrees Fahrenheit in Hopkinton. This was to the dismay of the 20,344 official and thousands of unofficial runners in the 108th running of the Boston Marathon. However, the weather did not faze two of the most well conditioned men of the Aerial Delivery Sustainment Team in Natick, MA. Chief Warrant Officer Three (CW3) Leo Venckus, the Active Duty Liaison Officer for TACOM ILSC Natick, and Item Manager, Warren Barrett, both from the Aerial Delivery Sustainment Team stepped up to the challenge and completed the historic grueling 26.2-mile road race.

Co-workers made the short walk to the marathon route to support the runners in Natick. They waved signs, cheered, and gave both runners encouragement as they trotted by at mile 10. The race was also a test of the fortitude of the co-workers, as they stood right beside a gentleman passing out Vaseline to the runners (trust me not the place to watch a marathon, you see things that are not meant to be seen). Team runner Leo Venckus was the first to appear, wearing bib number 16,899 which corresponded to his place at the starting line. He wore a bright orange "run for research" tank top, which made him easily distinguishable from the rest of the runners. Mr. Barrett ran by about 15-20 minutes later sporting his new "look."



CW3 Leo Venckus

The New England Chapter of the American Liver Foundation sponsored CW3 Venckus, as a member of the Run for Research Team. Through the generosity of family, friends and co-workers he was able to raise an amazing $7000, which goes to liver disease research. In January 1999, the Army Officer was diagnosed with Hepatitis C and he looked to the American Liver Foundation for help. He endured a year long treatment regiment and battled adverse side effects from weight loss, anemia to flu like symptoms. "He didn't even cry," said wife Amy in a radio interview. In January 2000, doctors confirmed that he conquered the disease and was now virus-free. CW3 Venckus is one of the lucky 40% that recover from this life-threatening disease.

This was the 3rd time the chief has run the marathon, but the first time as an official runner. His first time running the Boston Marathon was in 2001 that he ran as a testament to his returning to health after treatment. This year, although hampered with an injured hip, as well as the scorching 83-degree heat, he tapped into his many years of Army discipline and completed the race with a time of 5 hours 7 minutes and 55 seconds.

"The race was also a test of the fortitude of the co-workers, as they stood right near a gentleman passing out Vaseline to the runners (trust me not the place to watch a marathon, you see things that are not meant to be seen)."

Mr. Barrett completed his 3rd Marathon in 4 years. Despite little training Mr. Barrett ran as a "bandit" (an unofficial runner) and finished with a respectable time of about 5 hours and 40 minutes. Mr. Barrett prepared for the race by receiving a military style haircut, closed cropped and shaved. Before he looked like one of Damon's Disciples (ask a Red Sox fan what that is), with long hair and full black beard. A 16-year employee at Natick, Barrett stays in shape by playing softball. In the summer months Warren's life revolves around his team, which is appropriately named, "Madness." Good times are had on and off the field when Mr. Barrett is around.


Warren Barrett

CW3 Venckus and Mr. Barrett are true examples of grit, guts and determination. Although neither man will admit it, they are an inspiration to their family, friends and co-workers. A heartfelt congratulations goes out from the entire Aerial Delivery Sustainment Team, to both men who endured and went the distance for 26.2 miles.

Michael Maloney is the Aerial Delivery Sustainment Team's Clerk and Editor of Aerial Delivery Magazine.

Precision Airdrop, it's a gas! - No, really, it's AGAS

As the Army continues to operate in "hot spots" and hard to reach places, the need for safely getting equipment and supplies to remote and vulnerable locations becomes a challenge. The use of precision airdrop which allows supplies to be delivered safely by air, is one way the Army is meeting this challenge. As opposed to "dumb drops" which rely on Kentucky windage and a lot of luck to deliver supplies, precision air drop, as the term implies, allows for greater accuracy in delivering supplies to pinpoint location. Capewell Components Company of South Windsor, Connecticut and Vertigo Inc. of Lake Elsinore, California, have developed the Affordable Guided Airdrop Systems (AGAS).


AGAS Control unit rigged to a 2,200-pound payload

AGAS is designed for release from an aircraft at high altitudes. This capability enables both pilot, crew and aircraft to avoid small arms fire or shoulder fired missiles. The components of the system include electromechanical actuators which adjust the length of the parachute risers in order to steer the canopy. A GPS is used to send signals to the actuators to compensate for fluctuations in the wind. Both actuator and GPS work in synchronization to guide the entire load to its pre-determined point on the ground. A compass, CPU and drivers comprise the electronic components of the system.

AGAS also uses the standard Army G-12 cargo parachute to guide the load to its geographic location. The Army A-22 container, capable of holding 2200 lbs of supplies and equipment, is used to carry the load to its destination. A windpack dropsonde resembling a small torpedo attached to a parachute, measures wind data and the distance from the drop altitude to ground surface. This information is transmitted to the flight planning module which calculates a path of trajectory. The module passes the trajectory path information to the GPS to help guide the load to its intended landing spot. A built-in-test (BIT) verifies the health of flight controls prior to drop.

At the Army biennial Precision Airdrop Technology Conference and Demonstration (PATCADS) sponsored by the Airdrop Technology Team, Natick Soldier Center, Natick, MA, in Yuma AZ, in November of 2003, Capewell and Vertigo demonstrated their system. The Army's requires precision-guided loads to land within 100 meters of the target. Out of a total of six airdrops, AGAS was able to guide each load within 65 meters of the target. Three of the loads landed within 25 meters of the objective. Each of the drops were made from an altitude of 10,000 ft. Since PATCADS, Capewell and Vertigo have refined the design of the system. The system now weighs 150 lbs, down from the original weight of 240lbs. Access to electronic components and batteries is easier so the electronic components can be removed quickly and used for multiple airdrop missions. The ability to quickly remove vital components of the system and prevent them from getting into the hands of the enemy enables operational security to be maintained. AGAS is also compatible with the Precision Air Drop System (PADS) which has been adopted by the U.S. Air Force for guided and unguided air drop systems. According to Michael Hickey, the Aerial Delivery Products and Services Business Manager for Capewell Components Company, "AGAS is designed to be affordable, accurate , rugged and enhance aircraft survivability."

With increasing demand for delivering supplies with safety and accuracy, the military is placing more emphasis on precision airdrop. Companies such as Capewell Component Company and Vertigo Inc, may make the term, "dumb drops", a thing of the past.

Dan Galarza is the Aerial Delivery Sustainment Team Equipment Specialist and Editor-in-Chief of the Aerial Delivery Magazine

TECHNICAL PUBLICATION UPDATES

TM 10-1670-268-20&P/TO 13C7-52-22 (Type V/Dual Row Platform) Change 1 sent out. Change 2 will incorporate Low Cost Aerial Delivery System updates.
TM 10-1670-296-23&P/TO 13C7-49-2 (Ancillary Equipment for LVADS) Change 1 will incorporate Low Cost Aerial Delivery System updates
TM 10-1670-278-23&P/TO 13C5-26-2/NAVY NAVAIR 13-1-27 (15-ft Ext. Parachute) Enhanced version (currently under revision)
TM 10-1670-299-20&P/TO 14D1-2-470-2/NAVAIR 13-1-41 (Ancillary Equipment for Personnel Parachutes) Adding Parachute Drop Bag (Final review for LOGSA publication)
TM 10-1670-300-20&P/TO 14D1-2-469-2/NAVAIR 13-1-42 (Ancillary Equipment for Military Free Fall Equipment) Adding Parachute Drop Bag (Final review for LOGSA publication)
Change 1, TM 10-1670-276-23&P/TO 13C5-29-2/NAVAIR 13-1-29 (26-FT HV) DA Form 2028 generated changes (currently under revision)
Change 2, TM 10-1670-286-20/TO 13C5-2-41 (Sling extraction line Bag) DA Form 2028 generated changes (Final review for LOGSA publication)
Change 1, TB 43-0002-43 (Maintenance Expenditure Limits for FSC 1670) Re-look life cycle of MC-4 Harness/Container (pending)

The MC6 - Look for it in "06"

In December 1999 the United States Army, Special Operations Command (USASOC) determined the need to replace the Maneuverable Canopy (MC) 1-1C for high-altitude static-line operations. The MC1-1C demonstrates significant canopy damage when used at high altitude with heavy jumper mission loads and has proven unsuitable for Special Operations missions. The 10th Special Forces Group (SFG), located at Fort Carson, Colorado, and with a drop zone altitude in excess of 6000 feet above sea level, was chosen as the test facility. Addressing the need, USASOC sought out, tested and adopted a Forestry Service parachute aptly named the FS-14 (FS meaning Forestry Service). This was the primary parachute used by Smoke Jumpers. A few modifications later, USASOC renamed the parachute the SF-10A (SF signifying Special Forces) in honor of the 10th SFG USASOC attached the SF-10A canopy to the T-10 harness and Modified Improved Reserve Parachute System (MIRPS) and began to use this non-standard parachute system for operational requirements. The advantage to this solution, obviously, is that USASOC rapidly acquired a solution to their operational requirement without extensive acquisition research, development, and testing lag-time. The shortcomings to this approach are equally obvious. For now USASOC is responsible for the purchase, care, upkeep, and maintenance of a non-type classified (equipment not officially recognized by the Army), non-standard parachute system. Basically, they foot the entire bill for a system that could be adopted Army wide.

Special Ops will soon have the new parachute

Concurrent to the USASOC effort, the United States Army Infantry Center and School (USAIC&S) determined the need to develop a parachute system that would significantly reduce the number of jump injuries associated with current static-line systems (the T10C/D parachute). As a result, the Advanced Tactical Parachute System (ATPS) was developed which included the requirement to produce a steerable parachute that would replace the MC1-1C canopy. USASOC observed the development of ATPS and the improved parachute harness and reserve. They quickly realized a way to eliminate their non-standard parachute system, fulfill their need for a static-line, maneuverable parachute system that could operate with heavy mission loads at altitude, and be relieved of the costs of maintaining a USASOC specific item. In October of 2002, USASOC approached the acquisition community with the idea to develop the Special Operations Forces Tactical Advanced Parachute System (SOFTAPS) which simply takes the SF-10A canopy, already in operational use, and with minor modification to the risers, integrates it with the ATPS harness and reserve parachute. Concept exploration testing of this integrated system is complete with the Developmental Test (DT) scheduled to begin in the third quarter of FY04. The DT will closely evaluate the performance characteristics of this integrated parachute system to ensure it is operationally suitable as indicated in preliminary concept exploration testing. Upon successful completion of DT, Operational Testing (OT) will begin with the end result of type classification and fielding to the entire force. Units will start receiving the new parachute as early as 2nd Quarter 2006. Irvin Aerospace of California and Para-Flite Inc of New Jersey. have been awarded the contract to develop the new system. Irvin is responsible for developing the canopy while Para-Flite is responsible for developing the parachute harness and risers. Once officially adopted by the Army, the parachute will be known as the MC-6 Personnel Parachute System.

David Roy is the SOFTAPS Project Lead, 508-233-5198,
david.roy@natick.army.mil

Parachutes Give an Edge

feet and an airspeed of about 250 miles an hour, when, for some reason still a mystery to me, the ailerons and trailing-edge flaps on both wings parted company from the rest of the airplane at the same instant."

"This, of course, removed all possibility of lateral control, and raised the landing speed to about 100 miles per hour, since the rear 25 percent of all wing surface was gone."

"The cockpit was completely covered with a pyralin cover and I had two safety belts to unfasten. The cockpit cover was held down with two snaps, which required the use of both hands to unsnap. While loosening the safety belts with one hand I endeavored to gain a little altitude while the ship was on an even keel, with no success. Finally, she rolled to the right and started to dive. I let go of the stick and started working on the cockpit cover. "The cover jammed after being unfastened, and when I finally got out, the ship was going almost straight down at a terrific rate, and I had about three hundred feet to go. I had difficulty for an instant finding the ripcord, but when I pulled it, it seemed the chute was opened almost instantly. When the chute opened I was about as high as some radio towers a hundred feet away - probably between 75 and 100 feet. The ship hit the ground at the same instant as the chute opened."

"The ship was certainly going over 200 miles per hour when I bailed out and as I had, at most, 300 feet when I started fishing for the ripcord, I consider it quite a tribute that I got out with only a broken ankle. Probably the chute did not have time to slow me down to its normal rate of descent in the 75 feet in which it was open."

Wells' harrowing incident had more than one thing go wrong during those moments. "Murphy's Law" struck mightily at him; and each high-speed, time-consuming occurrence cost precious altitude. But the smart pilot was equipped to fight back at Murphy, and such foresight, plus readiness to act, paid off.

And "the damn thing" worked quite well!

We are proud to feature articles by the renowned para-historian Jim Bates. His articles featured in this magazine provide a historical perspective on the evolution of Aerial Delivery.

Delivery Schedule

FSC	NINN	NOUMENCLATURE	QTY	DELIVERY
1670	000724941	SEPARATOR	6	Jun-Aug 04
1670	002172422	LINK,PARACHUTE,CONN	12950	Jun-Aug 04
1670	002516601	PACK,CARGO PARACHUT	145	Jul-04
1670	004345783	COUPLING ASSY,AIRDR	330	Jun-Aug 04
1670	005680323	BAND,RUBBER,PARACHU	51000	Jul-04
1670	007533928	PAD,ENERGY DISSIPAT	9910	Jun 04 - Jun 05
1670	007835988	LINK ASSEMBLY,SINGL	7495	Jun-Oct 05
1670	008726109	PARACHUTE,CARGO	3150	Jun-Dec 04
1670	008924218	PARACHUTE,RESERVE,P	1002	Jun-Oct 04
5340	009370273	STRAP,WEBBING	17353	Jun 04 - Oct 05
1670	009993544	ANCHORING DEVICE,CA	1	Aug-04
1670	010167841	PARACHUTE,CARGO	2183	Jun 04 - Aug 06
1670	010272900	SLING,CARGO,AERIAL	2000	Sep 04 - Aug 05
4020	010476814	FIBER ROPE ASSEMBLY	800	Jun-Oct 04
4030	010476815	FIBER ROPE ASSEMBLY	650	Jun 04 - Jun 05
4030	010484044	SHACKLE ASSY	1899	Jun-04
4030	010484047	GRAB HOOK ASSY	397	Aug-04
1670	010583811	NET,CARGO,AERIAL DE	192	Jul-04
1670	010653755	PARACHUTE,CARGO	1870	Jun 04 - Feb 05
1670	010978817	RELEASE,CARGO PARAC	100	Aug 04 - Mar 05
1670	010992380	TIMER DELAY ASSEMBL	1249	Jun 04 - Feb 05
1670	011622369	RAIL TYPE V	100	Jun-Jul 04
1670	011622381	TANDEM LINK SUSP AS	624	Jun-Aug 04
1670	011622382	ROLLER PAD	70	Jun-Aug 04
1670	012350923	DEPLOYMENT BAG,PARA	441	Jun-Sep 04
1670	012622360	CANOPY,PERSONNEL PA	1200	Jun-Nov 04
1670	012721901	HARNESS,PERSONNEL P	9540	Jun 04 - Feb 05
1670	013041058	PANEL ASSEMBLY,REAR	200	Jun-Aug 04
1670	013043006	PANEL ASSEMBLY,MAIN	1700	Jun 04 - Feb 05
1670	013062100	PARACHUTE,PERSONNEL	3052	Jun 04 - Jul 06
1670	013286440	LINK,PARACHUTE,CONN	4189	Oct 04 - Jan 05
1670	013303279	CANOPY,PERSONNEL PA	920	Jun 04 -Jan 07
1670	013303280	HARNESS,PERSONNEL P	449	Jun 04 - Jan 05
1670	013303283	BRIDLE,PARACHUTE	470	Jun 04 - Jan 07
1670	013303284	RISER EXTENSION,PAR	430	Jun-Oct 04
1670	013303741	LOOP,CLOSING,MAIN	12600	Jun 04 - May 05
1670	013303742	LOOP,CLOSING,RESERV	17600	Jun 04 - Oct 05
1670	013303743	RIPCORD,MAIN RELEAS	1230	Jun 04 - May 05
1670	013303744	SLIDER,DOME-LIPPED	1220	Aug 04 - May 07
1670	013303745	LINES,CONTROL	1660	Jun 04 - Mar 08
1670	013303746	LINES,SUSPENSION	100	Jun-04
1670	013303747	PILOT CHUTE,MAIN	3500	Jun 04 - Jul 05
1670	013303748	BAG,DEPLOYMENT,RESE	85	Oct 04 - Jan 05
1670	013315423	PILOT CHUTE,RESERVE	310	Jun 04 - Apr 05
1670	013323916	CANOPY,PERSONNEL PA	2155	Jun 04 - May 08
1670	013347597	DEPLOYMENT BAG,PARA	920	Jun 04 - Mar 06
1670	013425135	TOGGLE,PARACHUTE	40	Sep-Nov 04
1670	013427686	DEPLOYMENT SYSTEM,R	135	Jun-Dec 04
1670	013538424	BRACKET ASSEMBLY,EX	1200	Jun-Cot 04
1670	014703696	LATCH ASSEMBLY,COUP	147	Aug-Sep 04
1670	014751207	PADDED POCKET ASSEM	300	Jun-Nov 04
1670	014751990	EXTRACTION PARACHUT	100	Aug-04
1670	014842234	PARACHUTE,PERSONNEL	11624	Jun 04 - May 05
1670	014851654	RAIL DRAS	175	Jun-Dec 04
1670	014851656	PANEL ASSEMBLY,MAIN	188	Jun-Oct 04
1670	014861342	ROLLER PAD,DRAS	125	Jun-Oct 04
1670	014870777	PARACHUTE,PERSONNEL	3576	Jun-Dec 04
1670	014875464	OUTRIGGER ASSEMBLY	70	Jun-Dec 04
1670	014875466	STRAP,CONNECTOR	250	Jun-04
1670	014937131	CONTROL BOX	100	Aug-04
6150	014943593	CABLE,EXTENSION	100	Aug-04
5340	014946313	CLAMP,RETAINER	100	Aug-04
5305	014946314	SCREW,CAP,HEXAGON H	50	Aug-04
6150	014946315	CABLE,POWER	100	Aug-04
6150	014946316	CABLE,MAIN	100	Aug-04
5340	014946318	COVER,EPJD	100	Aug-04
5935	014947965	CONNECTOR Y	100	Aug-04
5980	014948721	LIGHT EMITTING DIOD	100	Aug-04
6150	014948722	CABLE,SQUIB	100	Aug-04
5935	014948723	CAP,SAFETY,SQUIB	100	Aug-04
6150	014948724	CABLE,INTERCONN	100	Aug-04
6130	014948726	POWER SUPPLY	50	Aug-04
6150	014950652	CABLE PLATFORM	50	Aug-04
6625	014952015	TESTER SQUIB	100	Aug-04
1670	014952016	KIT,BAG	100	Aug-04
5980	014952018	LED,BLUE	200	Aug-04
6150	014952021	CABLE ASSEMBLY,POWE	100	Aug-04
1670	014964748	SIMULATOR,INITIATOR	100	Aug-04
1670	014965833	KEEPER,EPJD	100	Aug-04
1670	015024003	JETTISON DEVICE,PAR	100	Aug-04
1670	015024013	REFURBISH KIT	100	Aug-04
1670	015024014	TOOL KIT,REFURBISH	100	Aug-04
1670	015039820	CONTROL LINE ASSEMB	800	Jun 04 - Jan 05

The Cost Of Doing Aerial Delivery Business

Why do units who handle aerial delivery equipment have to pay for cargo airdrop equipment out of their maintenance budget, while equipment such as HMMWVs and protective masks are specifically funded by congress? It has to do with the supply classification of every item in the Army. Items such as HMMWVs and protective masks are class VII Major End Items and are authorized on unit requirement documents. Since the Army requires the unit to have it, the Army pays for the initial issue and replacement of those items. Items such as parachutes and Type V platforms, however, are class II Non-Major End Items which may or may not exist on a unit's requirements document. Though these items are needed to perform the unit's mission, they are paid for out of the unit budget rather than congressional allocated procurement funds. Additionally, Department of the Army has no visibility on cargo airdrop equipment readiness, serviceability or on-hand quantities. Is this the right way to do business in the airdrop community? Some say no, and there is an effort underway to challenge the way cargo airdrop equipment is funded in the Army.

"It is vital that the capabilities we are developing today reach those units who serve as the tip of the spear and are the most rapid deployed forces in the world." - Major John O'Regan

The Army categorizes Aerial Delivery Equipment as class II supplies

The Army Research, Development and Engineering Command oversees numerous Product Managers who develop improved Army equipment, to include improved cargo airdrop equipment. However, without procurement dollars from congress to field these new technologies, units must buy them with their unit budget. Potentially, these new capabilities would stand idle due to lack of unit funding to purchase the improved equipment. Major John O'Regan, the Assistant Product Manager for cargo airdrop developmental items, is concerned about how the funding issue affects the soldier in the field. He commented, "It is vital that the capabilities we are developing today reach those units who serve as the tip of the spear and are the most rapid deployed forces in the world. Army rigger units, especially those of the 18th Airborne Corps supporting the Strategic Brigade Airdrop (SBA) mission, deserve to have the most advanced equipment to perform their mission."

In November 2002, the Product Manager and the Combined Arms Support Command (CASCOM) combined forces to inform the Headquarters, Department of the Army (HQDA) G8, of their concerns. The G8 is the office that allocates the congressional funding to specific Army programs. The G8 informed them that, in order to compete for procurement dollars to field new technologies to Army units, all cargo airdrop equipment must be classified as class VII Major End Items. This is a monumental challenge as there are shifting priorities to supporting the war on terrorism and there is not enough money to fund all efforts. To address this challenge, the Product Manager and CASCOM formed an informal working group to undertake the effort of converting cargo airdrop components into systems.

The informal working group met three times last year and once this year. The goals of the working group were to determine the necessary path to convert these components into systems and make them readiness reportable. The most recent meeting included many Army unit representatives. This meeting served two purposes: to familiarize the field with the effort and to discuss the progress of the effort to date. Through the research of the working group members, numerous challenges to this effort have surfaced. The Integrated Logistics Support Center (ILSC) briefed the numerous fiscal and item management concerns of converting these items to systems. For example, once an item is designated as a system, the rules governing the money used to support the system change. These money rules are very strict. If a system is destroyed or lost, it can only get replaced with congressional allocated funding. Other services that purchase the equipment would have to follow different procedures to obtain the items. Army Prepositioned Stocks must be allocated and managed differently than they are now. In short, changing the classification of aerial delivery equipment would cause a ripple-effect through the entire supply and support system. Based on these challenges, the working group decided that it was wise to seek HQDA G4 sponsorship of this effort and to brief all options that may be available for funding cargo airdrop equipment. The attendees also decided to pursue legitimacy for the group to become an Integrated Process Team. CW4 Allen Douglas, CASCOM is the lead for this effort.

Sara Berner is a logistic management specialist for the logistics integration team at Natick, MA

Parachutes Give an Edge

A reader once complained about this column advocating that parachute-equipped personnel be ready to leave an uncontrollable, no-longer-flyable craft at any time.

Such chute-equipped people include pilots and passengers in aircraft performing "acrobatic flight" (commonly termed "aerobatics" by pilots) as defined in sections of FAR 91; many military aircraft personnel (e.g., crewmember, paratroop jumpmasters, cargo plane loadmasters); and civilian test pilots.

"Nearly everyone understands that there are no guarantees with any situation in life. But having a parachute and being ready to use it does give a pilot an edge in the worst of circumstances."

The reader, early on in his letter, referred to a parachute as "the damn thing," then went on to say: "And how about acro? From the perspective of a knowledgeable observer, I have observed that even with parachutes, not too many acro pilots survive a low-level problem (and most acro is usually low-level)."

Nearly everyone understands that there are no guarantees with any situation in life. But having a parachute and being ready to use it does give a pilot an edge in the worst of circumstances. Despite today's technological improvements in aircraft design and construction, something - anything - can go wrong. The well known "Murphy's Law" sums it up: "If anything can go wrong, it will - and at the worst possible moment!"

Take a look at two mishaps that took place more than 55 years ago. At that time there was no requirement to be equipped with a parachute for certain flight conditions, but smart pilots chose to do so. Here are the accounts (Aero Digest, June 1931) of two who were happy they made such a choice.

Fred Philbrick, of San Luis Obispo, California, was testing his plane for spinning qualities when he was precipitated into the ranks of the Caterpillar Club.

His plane, which had been locally made, had been successfully test-hopped. He wished, however, to determine whether it would recover from a spin. Accordingly, one day in July 1929, he took it up to 5,000 feet and gave it the test. It spun. When his safety belt broke, Philbrick was thrown from the plane. Though the plane was demolished, the pilot floated down safely. The following is his account of the experience:

"I climbed to 5,000 feet altitude, closed the throttle, and kicked her into a right-hand spin. After spinning two turns, I recovered it. Not satisfied with this one, I kicked her into another right-hand spin and held the stick all the way back! We surely did spin! Being satisfied that she could spin, I tried to bring her out, but something went wrong and I was thrown tight against my safety belt, which held for a moment and then unbuckled. I was thrown with terrific force out of the plane, striking the upper wing, breaking my goggles in two, cutting my nose and bruising my eye, which closed immediately."

Pilots rely on parachutes when their aircraft fails them

"I must have been stunned a bit. First I thought of what an awful fix I was in. Then I realized that I had an Irvin Air Chute on and wondered whether it was still on me or whether it had stayed with the ship - an impossible occurrence, of course, but, nevertheless, on looking down and actually feeling it, I experienced a tremendous relief. I got a good grip on the ring and pulled it. Then came the jerk. It had opened and I felt just as though I were in a big swing."

"I looked around trying to see the plane but my vision was bad and I could not. By this time I knew I was getting close to the ground but it was just a blur and before I could straighten up for the fall, I landed in sitting position, wrenching my back considerably."

"Observers told me that when I left the ship it turned on its back, made a 180-degree turn, and glided to the ground in that position. It was a complete washout."

The altitude at which Philbrick accidentally and surprisingly left his disabled aircraft wasn't given, but it doesn't take much to calculate the great deal of altitude he lost while testing his new airplane with repeated stressful aerobatic maneuvers.

Despite his wrenched back, he certainly fared better than his new, expensive, ill-fated plane.

At another time and place a pilot was testing one of his company's new products. Here's what happened: A handful of spectators was watching Ted Wells, Travel Air project Engineer, test a new ship. It was September 10, 1930 at the Central Avenue Airport, Wichita, Kansas. Wells was flying a racing ship of his own design, built in his spare time, and was making a power dive in his little black racer when developments made it necessary to abandon his ship. He wore an Irvin Air Service-type seat pack and though he bailed out at a low altitude, he escaped with only a broken ankle.

Wells' own account gives a vivid description of his jump: "The ship had the ailerons the whole length of the lower wing, and trailing-edge flaps the whole length of the upper wing. I had just leveled the ship off from a power dive at an altitude of about 500

“SPIDER CHUTE” - It's Back, Bigger, and Better Than Ever!

Those of you who read about the High Velocity (High-V) parachute, in last October's issue of the Aerial Delivery magazine have no doubt been waiting eagerly for the next exciting episode of "Spider Chute"! Well, did you know that the High-V "Spider Chute" has a big brother? It's true! A new Low Velocity (Low-V) parachute is being developed, and as with most older siblings, this is bigger and beefier than the little "bro". It may have up to twenty legs (instead of twelve legs like its smaller brother, the new High Velocity parachute) and each leg will be about 25-ft long. Its crown, the "body" of the spider, will be about 30-ft square.

Says Nina Shopalovich, Program Lead for LCADS, "these cheap, one-time use airdrop components help the user units, they help the recipients of humanitarian aid, and they help the taxpayer. It's such a great program to work on."

Like the High-V parachute, this Low-V "Spider Chute" is made of a simple woven polypropylene fabric that costs less than $0.50 per yard. The polypropylene closely resembles the material you've seen used for sand bags and tarpaulins. Huge quantities of it are being made every day for use in construction, making it simple and quick to obtain. As with the High-V chute, the lengths of fabric are stitched into a cross-hatch pattern to form the chute crown and its "legs", and nylon rope is knotted to the end of each leg to form the suspension lines. But unlike the original "Spider Chute", the Low-V chute is used to deliver loads from aircraft flying at low altitudes, about 500-1,250-ft above ground level. The High-V chute, which was profiled in the last issue of the Aerial Delivery magazine, will deliver loads from altitudes of 15,000 to 25,000-ft. Both of these innovative new chutes are currently being tested at Yuma Proving Ground, AZ, (LCADS) program. Both the High and Low-V parachutes when used with the Low Cost Container, form the Low Cost Aerial Delivery System (LCADS). The Low Cost Container, a container used to enclose the supplies when dropped from the aircraft, will be used for one-time use applications. The container is an inexpensive alternative to the heavier, more durable and expensive A-22 cargo container. It weights about 10 pounds and is made of a lightweight polypropylene, with only 6 pieces of hardware. Containing up to 2,200-lbs of supplies, it is suitable for both High Velocity and Low Velocity delivery from C-17 or C-130 aircraft, using either of the LCADS "Spider" chutes or standard parachutes. These three components, developed by the folks at Force Sustainment Systems, Research Development and Engineering Command, Natick, MA, will be used for humanitarian relief efforts and re-supply missions where it is difficult to recover airdrop equipment. The items are designed to be disposable, so they are light, simple in design and 55-80% cheaper than the standard parachutes and container now used for these sorts of mission. Bruce Bonaceto, who came up with the idea of the "Spider" and designed both chutes, says, "This design is revolutionary because it reduces the high cost of material and fabrication through simplification. It even appears that the new chutes will have a lower rate of descent than the standard chutes, which equates to more of the loads surviving."

Low velocity parachute carries the load safely to the ground

The simple design of the "Spider Chutes" and the Low Cost Container also provides a solution to the manufacturing bottleneck that normally forms when a relief mission begins. Initially, in order to meet relief effort requirements, the Army is challenged to meet the sudden surge in demand for the aerial delivery equipment used for humanitarian relief operations. In the past, the Army relied on a few major parachute manufacturers that were qualified to make the standard 26-ft Ringslot and G-12 parachutes. With a small industrial base, the Army was forced to pay high prices for increased production. Ironically, practically none of this expensive equipment, designed for many re-uses, was ever recovered. With the new High-V and Low-V Spider parachutes, small companies that normally would never be able to make an Army cargo parachute will easily be able to manufacture the parachutes. During a surge, a number of small manufacturers can quickly meet the demand.

Says Nina Shopalovich, Program Lead for LCADS, "these cheap, one-time use airdrop components help the user units, they help the recipients of humanitarian aid, and they help the taxpayer. It's such a great program to work on."
With such emphasis being put on these multi-legged creatures, who would've thought that "Spidermania" would find its place in the Army? The Low and High- V parachutes should be available by FY 05. So the next time you feel that tingling sensation on the back of your neck, look over your shoulder, it just may be a "Spider Chute" descending from the sky with much needed supplies.

Queen of the Skies

A hundred years ago a teen-age girl made her first parachute jump. More than 80 years later that jump and some of her other parachuting exploits were featured in an article by Frank W. Wiley. His account appeared in the April 1, 1975 issue of Truth News Trends (a.k.a., TNT), a short-lived parachuting news publication. Here's what Mr. Wiley wrote about Ruby/ Rubie Deveau:

Mrs. W.D. Owen of Missoula, Montana was an early-days exhibition jumper. Her accounts of parachute experiences give a rare insight into this earlier lighter-than-air activity. She was born in Germany in 1877, came to this country at the age of four, and was orphaned at an early age. As a young woman she was a member of a vaudeville show troupe stranded in Memphis, Tennessee. Here she saw an exhibition parachute jump from a balloon and made application for employment, then and there making her first parachute jump at 15 years of age. Mrs. Owen, then Ruby Deveau, followed this up-and-down career for three years, making 175 jumps and doing exhibition performances in many parts of the country. She had many close calls with the muslin and parachutes of that time.

Miss Deveau was billed as the "Queen of the Clouds."

The following quotation from the Nebraska State Journal of Lincoln, Nebraska gives a graphic account of balloon exhibitions of that era.

"About 3:00, the tenders brought in a huge roll of canvas and ropes and began to adjust the many different guy ropes and poles from which the balloon is suspended before inflation. The first act was to hang the canvas between the two stays about 50 feet high and arrange the ropes so it was supported from either side. Then the canvas is hung between the poles and 25 or 30 boys form a circle so that it presents the appearance of a huge tent.

"A fire is then built of kerosene under the canvas and the process of inflation begins. The big tent appears to be slow to swell up at first but toward the last it begins to puff out with the promptness of an independent legislator.

Women like Ruby Deveau A.K.A. "Queen of the skies" were early pioneers of early parachuting

"While the balloon is being inflated with this hot air it presents an inspiring appearance; nearly 73 feet high, it sways and heaves on the ropes, apparently impatient to go on its errand through space. The parachute, which looks like a large umbrella, is about 10 feet across and, while the balloon is being inflated, it is attached to a large hoop on the bottom of it and stretched out on the ground. Then when the balloon is cut loose from its moorings, the aeronauts grasp the trapeze bar and are taken like rockets through endless space.

“After they reached an altitude of probably 3,000 feet above the starting place, Krug cut the parachute loose from the balloon and made the descent, landing in the creek.”

"Yesterday afternoon when the pistol shot sounded as the signal to cut the big airship loose, Professor Krug and Mme. Ruby, the "Queen of the Clouds," both reached for the trapeze bars and in a few seconds they were on their way to the clouds. After they reached an altitude of probably 3,000 feet above the starting place, Krug cut the parachute loose from the balloon and made the descent, landing in the creek.

"The nervy little queen was not prepared to descend at that time, however, and as soon as the weight of the professor was cut loose the balloon took an extra shoot upward and the little lady looked like a diminutive speck in the sky. For a time the big crowd stood breathless as the big ship kept weaving and shooting higher into the heavens. Her auditors began to believe, as a matter of fact, that she had met with some misfortune and could not cut loose from the balloon. It was an awe-inspiring sight, there above a mile above the earth, suspended in midair was a woman moving her handkerchief while the onlookers believed it was a signal of distress.

"Finally a pistol shot was heard and in about 10 seconds, or as soon as the sound could travel to her, the parachute dropped, unfolded, and she started downward. When the parachute was first loosened it was folded up like an umbrella and for a few hundred feet she shot downward like an arrow, then it opened and the descent was slow. While coming down it would weave to and fro and swing the lady's body back and forth with what seemed to be dangerous force."

The following month the Journal reported:

"The Grace Shannon Balloon Company was the attraction of Lincoln Park again yesterday. This company, it will be remembered, is the one that employs the very nervy Rubie Deveau, known as the "Queen of the Clouds." Yesterday afternoon she outdid all her previous records as to height of the ascent and furnished an emotional entertainment for over 4,000 people who had come to Tom Hickey's fountain of pleasure. The ascension was not made until 5:00 owing to difficulties encountered in getting ready, but by the time the big air ship was cut loose the multitude looked on in wonder. Attached to the balloon were three parachutes, one for Mme. Deveau, one for Professor King, and also one for the dog that took a trip toward the happy hunting ground.

"Prof. Krug cut loose first, and then Mme. Deveau went like a flash through space. At times the big balloon would almost invert and sway around in midair with the recklessness of an individual who had just taken upon himself a jag. The height reached was estimated

ATPS To Happen ASAP

Army asks industry for help in developing new parachute

The folks at Team Airborne Soldier, responsible for Personnel Airdrop Systems, and part of the Research Development and Engineering Command, Natick, MA, have completed market research into the feasibility and commercial availability of main parachute canopies, which can be purchased and integrated with the existing Advanced Tactical Parachute System (ATPS) harness and reserve. The market research included all US and foreign made canopies and resulted in the identification of 5 canopies that are potentially an improvement over the current T10D parachute. In order to determine which canopy is the most suitable for integration with ATPS, the team will conduct a "fly-off" from 7-18 June 2004, at Yuma Proving Grounds, AZ, which will, determine the performance characteristics of each of these main canopies. The goal is to identify a canopy with an effective Rate of Descent (ROD) of approximately 18 feet per second (fps) and integrate it with the ATPS harness and reserve for a complete system.

The fly off is structured in particular to evaluate the following performance characteristics.

1) Rate Of Descent (ROD)
2) Obstacle avoidance
3) Altitude loss
4) Oscillation
5) Opening shock

Currently there are five candidates participating in the "fly-off". During the competition, mannequins will be used to collect technical data on performance. An evaluation of parachute packing and maintenance procedures will also be conducted. At the conclusion of the "fly-off", two of the five candidates will be selected to conduct an Early Operational Assessment (EOA) at Fort Bragg, NC, in November 2004. The Airborne Special Operation Test Directorate (ABNSOTD) will use their test jumpers during the EOA to give a subjective analysis on the performance of the two canopies. The results of the analysis will be provided to the Combat Developer at U.S Army Infantry Center at Fort Benning, GA, and the Program Executive Office-Soldier, at Fort Belvoir, VA, who will make the selection for the ATPS main canopy.

Government testing is expected to begin in March 05 and end in May 07. Testing includes developmental (technical) and operational (user assessment) where all Operational Requirements Document (ORD) requirements will be evaluated.

Mark Whiteman, ATPS Project Engineer, 508-233-4819,
Gordon.mark.whiteman@us.army.mil

Queen of the Skies

at 12,000 feet and when Mme. Deveau came back to the park she was congratulated on the success of the ascension."

Mrs. Owen made her last parachute jump in 1895 in London, Ontario (Canada), at which time she drifted into a chimney - breaking her back. She spent many months in a hospital and upon recovery, studied typing and shorthand at a business college in London, Ontario.

She became a legal stenographer and later homesteaded at McIntosh, South Dakota, where she met and married David W. Own in 1919. They both worked for a road contractor and moved to Missoula in 1925.

Mrs. Owen's husband died in Missoula in 1955 and she still resides there, showing a very understandable interest in the activities of the Missoula Forest Service smokejumpers.

Mrs. Owen now lives at the Hillside Manor in Missoula (1964) and enjoys telling of her early experiences, many of which are recorded in her scrapbook of newspaper accounts of her parachute jumps and balloon flights.

o o o

There were many other female parachutists in the pioneering of parachuting, and each of them, in small ways as well as in important steps, made worthwhile contributions in gaining confidence in parachutes.

We are proud to feature articles by the renowned para-historian Jim Bates. His articles featured in this magazine provide a historical perspective on the evolution of Aerial Delivery.

david.villar@us.army.mil

GARY WHITE *SSTR*
DSN: 236-1502/8831
COM: 910-396-1502/8831
FAX: 236-8657
CELL: 910-964-2051
Gary.White1@us.army.mil

USA LAO 1st COS
ATTN: SOSCU-1COS, Gary White
P.O. Box 72620
Ft. Bragg, NC 28307-5000

LTC Roberson
DSN: 236-4004
COM: 910-396-4004

Roger Wilson
DSN: 315-730-6817
COM: 011 82 31 869 6817
FAX: 315-730-6802
CELL: 011-82-11-695-0493
Roger.Wilson@natick.army.mil or
roger.d.wilson@us.army.mil

USA LAO 2nd ID
ATTN: AMOSOS-FE-LAO-2ID, Roger Wilson
Bldg S-2760 Camp Mobile
Unit #15048
APO AP 96224-0309

USA LAO-2ID
ATTN: AMOSOS-FE-LAO-2ID
SBCCOM LAR: Roger Wilson
Bldg. S-2760 Camp Mobile
Unit 15048
Dongduchon, Korea 96224-5048

LTC Kerry Sutton
DSN: 315-730-1967
COM: 011-82-31-869-1967
FAX: 315-730-6802
CELL: 011-82-11-9028-1967
(Dongduchon, Korea Office)

KARL WOLF *SSTR*
DSN: 737-9917
COM: 254-287-9917
FAX: 663-5619
FAX COM: 254-285-5619
CELL: 254-291-7857
Karl.Wolf@natick.army.mil or
karl.wolf@us.army.mil

USA LAO 13th COSCOM
ATTN: Karl Wolf
1001 761st Tank Bn Ave
Ft. Hood, Texas 76544-5072

FED EX Address:
Karl Wolf
Bldg. # 4419 Santa Fe Ave
Ft. Hood, Texas 76544-5072

Major Sandifer
DSN: 737-6608
FAX: 737-7917

Mun Yong Yi (Sec)
DSN: 315-722-3037
COM: 011-82-32-520-6037
COM: 011-82-32-520-6037
FAX: DSN: 315-722-3047
YiMun@usfk.korea.army.mil

AMC FWD-FE (TACOM SBC)
Bldg. 1530, Camp Market
Unit 15293
APO, AP 96283-0066

Larry Marks, SCR
DSN: 315-722-3552
COM: 011-82-32-520-6552
FAX: 315-722-3047
(Seoul, Korea Office)

Aerial Delivery Equipment Forecast

This list represents Aerial Delivery equipment that will be funded in 1st QTR FY05. Manufacturers who have received contract award for the item(s) listed will be notified immediately when funds are available.

NSN	Nomenclature	Quantity
5340000408219	STRAP, WEBBING	2000
4030010484047	GRAB HOOK ASSEMBLY	2200
1670015039819	CLAMP	1850
1670010272900	SLING,CARGO,AER	2000
1670011083457	TIMINING MOVEMENT	1200
1670013041057	PANEL ASSEMBLY, REAR	500
1670014876077	WEBBING, TEXTILE, INT	1000
5325010871605	FASTNER SNAPSLIDE	9000
1670003600475	RISER EXTENSION, PAR	215
1670015041459	STIFFENER, MAIN, RIGHT	375
1670004345783	COUPLING ASSY, AIRDROP	430
1670011077651	LINE, MULTI LOOP	630
1670015041458	STIFFENER, RESERVE,C	200
1670015041456	STIFFENER MAIN, TOP	300
1670015041460	STIFFENER MAIN, LEFT	300
1670013425913	SKID BOARD	3000

NSN	Nomenclature	Quantity
1670014936418	LINK ASSEMBLY, SMALL	1600
1670010272902	SLING, CARGO, AERIAL	1300
1670008426109	PARACHUTE CARGO	3095
1670000634500	RIP CORD PARA	200
1670013070534	SLIDE TOGGLE	30
1670015041456	STIFFENER	200
4030006788560	SHACKLE	4500
5930013904706	SWITCH ASSEMBLY	60
1670015041461	STIFFENER, MAIN, BOTTEM	200
1670010644452	LINE, MULITILOOP 60FT	1000
1670003600475	RISER EXTENSION, PAR	215
1670001686065	HARNESS, PERSONNEL E	336
1670007084473	RISER EXTENSION	3000
1670013336082	TIE DOWN CARGO	700
1670003600475	RISER EXTENSION, PAR	215
1670013347597	DEPLOYMENT BAG	600

FAX: 314-484-8573
Lucion.Parker@hq.21tsc.army.mil or
lucion.parker@us.army.mil

CMR 429, Box 1312
APO AE 09054

FEDEX:
Lue Parker
LAO 21st TSC
PANZER KASERNE
BLDG 3004, RM 213
MANNHEIMER STR.
67657 KAISERSLAUTERN

Jose A. Pena
DSN: 863-2734
COM: 337-531-2734
FAX: 863-4811
CELL: 337-208-4261
Jose.Pena@natick.army.mil or jose.pena@polk.army.mil or
jose.pena2@us.army.mil

USA LAO - Ft. Polk
ATTN: SOSCU-PK, Jose Pena
PO Box 3928, Bldg 414
Ft. Polk, LA 71459-0928

Martha Crosby, Actg. Chief
DSN: 863-4436
COM: 337-531-4436
FAX: 863-4811
martha.crosby@polk.army.mil

Michael J. Printer
DSN: 314-355-8577/8588
COM: 011-49-9321-305-8577
FAX: 314-355-8604
CELL: 011-49-160-908-52802
Michael.Printer@natick.army.mil or
Michael.Printer@hq.1id.army.mil or
Michael.Printer@us.army.mil

USA LAO 1st ID,
Unit 26132 CMR 449, Box 271
ATTN: SOSFS-E-KZ, Michael Printer
APO AE 09031

FEDEX:
Michael Printer
HHC DISCOM-LAO 1ID
Gebaude 107
Harvey Barracks
97318 Kitzingen Germany

LTC Thomas McCarthy
DSN: 314-355-8606/8617
(Kitzingen, Germany)
Thomas.McCarthy@hq.1id.army.mil

Michael D. Reynolds
DSN: 639-3765/4304
COM: 580-442-3765/4304
FAX: 639- 4226
CELL: 580-695-3163
Mike.Reynolds@natick.army.mil or
reynoldsm@sill.army.mil or
mike.reynolds@us.army.mil

USA LAO
ATTN: SOSCU-SL, Michael Reynolds
Bldg 2594, Currie Rd
Ft. Sill, OK 73503-6800

CW5 Arthur Johnson
DSN: 639-4961

Vincent M. Riddick
DSN: 315-722-3361
COM: 011-82-32-520-6361
FAX: 315-722-3047
CELL: 011-82-11-9134-4356
RiddickV@natick.army.mil or
vincent.riddick@us.army.mil

AMC FWD-FE, Vincent Riddick
BLDG 1530, Camp Market
Unit 15293
APO, AP 96283-0066

FEDEX:
Same as SCR Office

Larry Marks, SCR
DSN: 315-722-3552
COM: 011-82-32-520-6552
FAX: 315-722-3047
(Seoul, Korea Office)

Kenneth W. Sawyer
DSN: 315-738-7007
COM: 011 822-7918-7007
FAX: 315-723-3261
CELL: 011-82-11-383-9534
SawyerK@usfk.korea.army.mil

LAO SEOUL, Kenneth Sawyer
AMC Pacific Satellite Office
S4312 South Post
APO, AP 96205

Ms. Linda Holmes (Actg. Chief)
DSN: 315-721-7570
COM: 011-82-2-270-7570
FAX: 315-721-7580
(Seoul, (Yongsan) Korea Office)

STEVEN SHOTWELL *SSTR*
DSN: 315-768-6209
COM: 011-82-53-470-6209
FAX: 315-768-8034
Cell: 011-9921-6438
Steven.Shotwell@us.army.mil or Steven.
Shotwell@usfk.korea.army.mil

LAO-19th TSC
ATTN: AMOSOS-FE-LAO-19T, Steve Shotwell
55th TSC MMC
APO, AP 96218-5016

(After June 28th)
US ARMY MATERIAL COMMAND
LOGISTICS ASSISTANCE OFFICE
ATTN: SFSCN-CO-101 (STEVE SHOTWELL)
BLDG 2209 INDIANA AVE
FORT CAMPBELL, KY 42223

Larry Marks, SCR
DSN: 315-722-3552
COM: 011-82-32-520-3552
FAX: 315-722-3047
(Daegu, Korea Office)

Robert Tafoya
DSN: 738-0944
COM: 254-285-0944
FAX: 737-3843
CELL: 254-289-9992
Robert.Tafoya@natick.army.mil or
robert.tafoya@us.army.mil

LAO 4TH ID
SOSCU-4ID, Robert Tafoya
1006 761ST Tank Bn Ave, Bldg 4421
Ft. Hood, Texas 76544-5072

LTC Christopher Zendt
DSN: 238-3103
Cell: (254)-289-2976

Fred M. Tonnemaker
DSN: 317 353-2335
COM: 907-353-2335
FAX: 317-353-2388/2305
CELL: 907-460-4785
Fred.Tonnemaker@natick.army.mil or
fred.tonnemaker@us.army.mil

CHIEF, AMC LAO-Alaska
ATTN: AMOSOS-FE-LAO-AK, Fred Tonnemaker
PO Box 35049 (TACOM SBC LAR)
Ft. Wainwright, AK 99703-0049

CW5 Tim S. Barker
DSN: 317-353-2321
COM: 907-353-2321
FAX: 317-353-2305

David A. Villar
DSN: 870-3797
COM: 912-767-3797
FAX: 870-8684
CELL: 912-398-8540

USA LAO Ft. Stewart
1086 William H. Wilson Ave.
Bldg. 623, Room 225
ATTN: SOSCU-3ID, David Villar
Ft. Stewart, GA 31314-3317

LTC Jay T. Hirata
DSN: 870-2935
Hiratajt@stewart.army.mil

TACOM LARS Directory (Natick, MA)

Kenneth Baker
DSN: 315-768-8495
COM: 011-82-53-470-8495
FAX: 315-768-8034
Cell: 011-82-11-695-0492
bakerke@usfk.korea.army.mil or
kenneth.baker@us.army.mil

20Pth SG
Unit 15494, Kenneth Baker
Box 2404
APO, AP 96218-5494

FEDEX:
Kenneth Baker
LAO 19th TSC
Bldg. S-1654
Camp Henry
Daegu, Korea KR 96218-0172

Arnold Pindle
DSN: 315-768-7883
COM: 011-82-53-470-7883
FAX: 011-82-53-470-8034
(Daegu, Korea Office)

Paul Barsamian
DSN: 236-9156
COM: 910 396-9156
FAX: 236-5588
CELL: 910-964-2064
Paul.Barsamian@natick.army.mil or
Barsamianp@bragg.army.mil or
paul.barsamian@us.army.mil

USA LAO 1st COSCOM
ATTN: SOSCU- 1COS, Paul Barsamian
Bldg MT-2645 (TACOM SBC LAR)
Ft. Bragg, NC 28307-5000

LTC Conrado B. Morgan
DSN: 337-5262
COM: 910-476-5824

Richard Bittle
DSN: 635-7863
COM: 270-635-7863
FAX: 635-7863
CELL: 931-980-1833
Richard.Bittle@natick.army.mil or
rick.bittle@us.army.mil

USA LAO 101st ABN DIV
ATTN: SOSCU-101, Richard Bittle
BLDG 2209 (Mr. Bittle)
Ft. Campbell, KY 42223-5000

LTC Williams Huggins
DSN: 635-6929
FAX: 635-3730

Richard Boggs
DSN: 856-1935
COM: 785-239-1935
FAX : 856-5943
CELL: 785-969-7552
Richard.Boggs@natick.army.mil or
richard.boggs@riley.army.mil or
richard.boggs1@us.army.mil

USA LAO – Ft. Riley
ATTN: SOSCU-RI, Richard Boggs
Bldg 8100, Rm A-10 (TACOM SBC LAR)
Ft. Riley, KS 66442-6828

Michael T. Minyard
DSN: 856-5130

Roman Brooks
DSN: 835-4115
COM: 706-545-4115
FAX: 835-6019
CELL: 706-207-6901
brooksr@benning.army.mil or
Roman.Brooks@natick.army.mil or
roman.brooks@us.army.mil

USA LAO – Ft. Benning, GA
ATTN: MFSCN-CO-BE, Roman Brooks
7203 Baltzell Ave., Bldg. 324
Ft. Benning, GA 31905-2663

CW5 Mark A. Stewart
DSN: 835-5617/4185
COM: 706-545-6019

Jacob Burger
DSN: 315-753-6015
COM: 011-82-31-690-6015
FAX: 315-753-6010
CELL: 011-82-11-9921-6394
Jacob.burger@natick.army.mil or
burgerj@usfk.korea.army.mil or
jake.burger@us.army.mil

HHC USASA AREA III
UNIT# 15716, Jacob Burger
APO, AP 96271-5716

FEDEX:
Mr. Jacob Burger
HHC USASA AREA III
UNIT 15716 (LAO TACOM SBC)
LAO BLDG 737, Camp Humphrey's
Pyongtaek, Korea
Phone: 31-690-6015

CW4 David Douglas
DSN: 315-753-6013
COM: 011-82-31-690-6013
CELL: 011-82-11-9028-3758
(Pyongtaek, Korea Office)

BILLY CAGLE *SSTR*
DSN: 314-375-3779
COM: 011-49-621-487-3779
FAX: 314-375-5012
CELL: 011-49-160-908-52801
Billy.Cagle@natick.army.mil or
billy.cagle@us.army.mil

CDR, LSE-Europe
ATTN: SOSFS-E-STR-SB, Billy Cagle
Unit 29331, Box 117
APO, AE 09266

FEDEX:
HQ AMC FWD Europe (Attn: PBO)
Hammond Barracks, Bldg 970, Rm 103
Seckenheimer Haupt Strasse
68239 Mannheim Germany

STEPHEN OSTMAN (SCR)
COM: 011-49-621-4873461
CELL: 011-49-160-901-04895
stephen.ostman@us.army.mil
sostman@larnet1.ria.army.mil
(Seckenheim, Germany)

Derek Colton
DSN: 315-456-0885
COM: 808-656-0885
FAX: 315-456-0876
CELL: 808-306-1069
Derek.Colton@us.army.mil

USA LAO 25th (L) ID (L)
ATTN: MFSFE-LAO-25ID, Derek Colton
Bldg 6043, East Range
Schofield Barracks, HI 96857-5400

LTC Brian F. Coleman
DSN: 315-456-0872
COMM: 808-656-0872
CELL: 808-347-3255

Anthony Culbertson
DSN: 835-0924
COM: 706-545-0924
FAX: DSN: 835-6019
Cell: 706-662-2960
Anthony.Culbertson@natick.army.mil
anthony.culberston@us.army.mil

USA Logistic Assistance Office
ATTN: MFSCN-CO-BE, Anthony Culbertson
7203 Baltzell Ave., Bldg 324 Rm 213
Ft. Benning, GA 31905-2633

Mr. Bill Polly (Acting)
DSN: 835-4236

Nicholas DeBolt
DSN: 581-6410
COM: 573-596-0278

USA LAO
ATTN: SFSCN-CO-LW, Nicholas DeBolt
Bldg 1549N

Nicholas DeBolt, (Actg. LAO)
DSN: 581-0278/7314
COM: 573-596-0278

FAX: 581-0155
CELL: 573-337-1488
Deboltn@wood.army.mil or
Nicholas.DeBolt@us.army.mil

Edgar A. Epps
DSN: 315-732-6384
COM: 011-82-31-870-6384
FAX: 315-732-7163
CELL: 011-82-11-9921-6738
Edgar.Epps@usfk.korea.army.mil or
edgar.eppssr@us.army.mil

James A. Flugmacher
DSN: 978-3371
COM: 915-568-3371
FAX: 978-2802
CELL: 915-449-6092
James.Flugmacher@us.army.mil

Thomas Foushee
DSN: 738-7718
COM: 254-288-7718
FAX: 737-7917
CELL: 254-289-0921
Thomas.Foushee@hood.army.mil,
thomas.foushee@us.army.mil

Mac P. Franklin
DSN: 314-375-3778
COM: 011-49-966-283-2044
FAX: 314-375-8145
CELL: 011-49-160-908-52804
Mac.Franklin@us.army.mil

John Galimore
DSN: 314-476-2044
COM: 011-49-966-283-2044
FAX: 314-476-2876
CELL:
John.Galimore@ natick.army.mil

Rocky Gerlach
DSN: 966-3860
COM: 870-540-3860
FAX: 966-3478
Rockwell.Gerlach@natick.army.mil

Frank Gerlach
DSN: 772-9655
COM: 315-772-9655
FAX: 772-4184 or 772-2456
CELL: **315-772-4285**
Frank.Gerlack@drum.army.mil,
Frank.gerlack@natick.army.mil,
frank.gerlack@us.army.mil

Andrew Gosselin
DSN: 367-5452
COM: 404-464-5452
FAX: 367-7893
CELL: 404-713-5796
Andrew.Gosselin@natick.army.mil or
andrew.gosselin@us.army.mil

JAMES HARRIS *SSTR*
DSN: 367-7080
COM: 404-464-7080
FAX: 367-7893
CELL: 404-713-5795
James.Harris@natick.army.mil or
james.harris12@us.army.mil

Scott L. Jack
DSN: 821-8337
COM: 520-533-8337
FAX: 879-8257
CELL: 520-450-0368
Scott.Jack@natick.army.mil or scott.jack@us.army.mil or
Scott.jack@hua.army.mil

James L. Kalawaia
DSN: 470-5249
COM: 760-380-5249
FAX: 470-4675

2818 Nebraska Ave
Ft. Leonard Wood, MO 65473-8933

USA AMC LAO 2nd ID TACOM
ATTN: E. EPPS, Edgar Epps
HHC Area 1 Sup Activity
UNIT #15707
APO AP 96258-0707

USA AMC LAO
AMSOS-CN-BL, James Flugmacher
Bldg 620, Taylor St., Rm 12
Ft. Bliss, TX 79916-6812

USA LAO 13th COSCOM
ATTN: SOSCU-13COS, Thomas Foushee
1001ST 761 Tank Bn Ave
Ft. Hood, TX 76544-5072

FEDEX:
USA LAO 13th COSCOM
ATTN: SOSCU-13COS, Thomas Foushee
Building 4419, Santa Fe Ave
Ft. Hood, TX 76544-5072

CDR: LSE EUROPE
ATTN: SOSFS-E-LAR-SB, Mac Franklin
Unit 29331
APO, AE 09266

USA LAO 7th ATC
Unit 28038, John Galimore
APO, AE 09112

Pine Bluff Arsenal DOL
ATTN: AMSSB-OPB-DL, Rocky Gerlach
10020 Kabrich Circle
Bldg 32-210
Pine Bluff, AR 71602-9500

USA LAO Ft Drum
ATTN: SMSOS-CN-10, Frank Gerlack
124 1st St West
Bldg. T-124
Ft. Drum, NY 13602-5039

AMC-CONUS
ATTN: SOSCU, Andrew Gosselin
1777 Hardee Avenue SW
Ft. McPherson, GA 30330-1062

AMC-CONUS
ATTN: SOSCU, James Harris
1777 Hardee Ave SW
Ft. McPherson, GA 30330-1062

US ARMY AMC LAO
SFSCN COHU, Scott Jack
Bldg 22408
448 Christy Ave & Butler Rd.
Ft. Huachuca, AZ 85613-7066

Chief, USA-AMC
Logistics Assist Office
ATTN: SFSCN-CO-IR, James Kalawaia
TACOM SBC LAR

CELL: 309-912-4288

LTC Kerry Sutton
DSN: 315-730-1967
COM: 011-82-31-869-1967
FAX: 315-730-6802
CELL: 011-82-11-9028-1967

Chief, Rafael Guzman
DSN: 978-1839
COM: 915-568-1839

MAJ Kelly Sandifer
DSN: 737-9513
COM: 254-287-9513

LTC Hodges (deployed w/1AD)

(Baumholder, GE)

Chief, Grady M. Embrey

(Vilseck, GE)

Deborah Eifling
DSN: 966-3158
COM: 870-540-3158

LTC Michael J. Levesque
DSN: 772-6829

VACANT
DSN: 367-6293
COM: 404-464-6293
FAX: 367-7893

VACANT
DSN: 367-6293
COM: 404-464-6293
FAX: 367-7893

Chief, Donald Mumma
DSN: 879-6329

MAJ (P) Ernest J. Reschke
Chief, LAO NTC
DSN: 470-5002

CELL: 760-217-9845
James. Kalawaia@natick.army.mil or
kimo.kalawaia@us.army.mil

William Kurz
DSN: 314-375-3778
COM: 011 49 621 487-3778
FAX: 314-375-5012
CELL: 011 49-160-908-52798
William.Kurz @natick.army.mil or
william.kurz@us.army.mil

Mafalda Lawson, Admin
DSN: 367-6258
COM: 404-464-6258
FAX: 367-5858
Mafalda.Lawson@Forscom.army.mil or
mafalda.lawson@us.army.mil

Gary Lee
DSN 863-7920
COM:(337) 531-7920
FAX: 863-4227
CELL:
Gary.Lee@natick.army.mil or
Gary.Lee@polk.army.mil or
gary.thomas.lee@us.army.mil

Steve Lernyei
DSN: 314-634-8742
COM: 011-39-0444-51-8742
FAX: 314-634-6184
CELL: 011-49-160-908-52803
Adolf.Lernyei@natick.army.mil

LARRY MARKS *SCR*
DSN: 315-722-3552
COM: 011 82 32 520 6552
FAX: DSN: 315-722-3047
CELL: 011-82-11-383-1695
larry.marks@us.army.mil

Riley (Doug) Minor
DSN: 738-5415
COM: 254-288-5415
FAX: 738-5199
CELL: 254-289-7798
riley.minor@hood.army.mil or
riley.minor@us.army.mil

Robert Murdick
DSN: 772-3915
COM: 315-772-3915
FAX: 772-4184
CELL: 315-771-4291
Robert.Murdick@natick.army.mil or
bob.murdick@us.army.mil

Dwain Pannell
DSN: 635-6937
COM: 270-798-6937
FAX: 653-0563
CELL: 931-980-1313
Dwain.Pannell@natick.army.mil or
dwain.pannell@us.army.mil

Lucion (Lue)T. Parker
DSN: 314-484-7538
COM: 011-49-631-413-7538

P.O. Box 105011
Ft. Irwin, CA 92310-5011

FEDEX:
ATTN: TACOM SBC LAR (James Kalawaia)
Bldg 502 Langford Lake Rd.
Ft. Irwin, CA 92310

CDR, LSE-Europe
ATTN: SOSFS-E-SCR-SB, William Kurz
Unit 29331, Box 374
APO, AE 09266

AMC-CONUS
ATTN: SOSCU, Mafalda Lawson
Hardee Avenue SW, Bldg. 200
Ft. McPherson, GA 30330-1062

USA LAO - Ft. Polk
ATTN: SOSCU-PK, Gary Lee
PO Box 3928, Bldg 414
TACOM SBC LAR
Ft. Polk, LA 71459-0928

USA LAO – SETAF
UNIT 31401, Box 12, Steve Lernyei
APO, AE 09630

FEDEX:
LAO –SETAF
DODDAC: W81AT1
ATTN: SOSFS-E-VI
UNIT 31401 BOX 12
APO AE 09630
LERINO, ITALY
BLDG 80A

AMC LSE-FE (TACOM SBC)
ATTN: AMOSOS-FE-SBCCOM, Larry Marks
BLDG 1530, Camp Market
Unit 15293
APO, AP 96283

FEDEX:
V. Riddick or So, Min Ho
Phone: 032-520-6552
Company: AMC FWD-FE, Larry Marks
Bldg 1530, Camp Market
Bupyong , Korea

LAO 1ST CAV
SOSCU-1CD, Doug Minor
1001 761ST Tank Bn Ave, Bldg 4434
Ft. Hood, Texas 76544-5070

FEDEX:
USA LAO 1ST CAV
ATTN: SOSCU-1CD, Doug Minor
Building 4434, Santa Fe Ave.
Ft. Hood, TX 76544-5070

USA LAO Ft. Drum
ATTN: SMSOS-CN-10, Robert Murdick
124 1st St. West
Bldg. T-124
Ft. Drum, NY 13602-5039

USA LAO 101st ABN DIV
Attn: SOSCU-101, Dwain Pannell
Bldg 2209
Ft. Campbell, KY 42223-5000

LAO 21st TSC
200th TSC
ATTN: SOSFS-E-KA, Lue Parker

Gary Frier
COM: 011-39-621-730-5442
DSN: 314-380-5442
(Mannheim, Germany)

James Harris *FORSCOM Liasion*
DSN: 367-6293
COM: 404-464-6293
FAX: 367-7893
CELL:
James.Harris@natick.army.mil or
james.harris12@us.army.mil
Martha Crosby (Actg. Chief)
DSN: 863-4436
COM: 337-531-4436
FAX: 863-4811

CW4 Bobby Ingram
DSN: 314-634-6190
COM: 011-39-0444-51-6190

(Vicenza, Italy)

COL James Gray
DSN: 315-722-3074
011-82-32-520-6074
Fax: 315-722-3043
(Seoul, Korea Office)

LTC Lee Vinson
DSN: 737-6334
FAX: 738-5199

LTC Michael J. Levesque
DSN: 772-6829

Dr. Lacy Moon
DSN 314-484-8592
(Kaiserslautern, Germany)